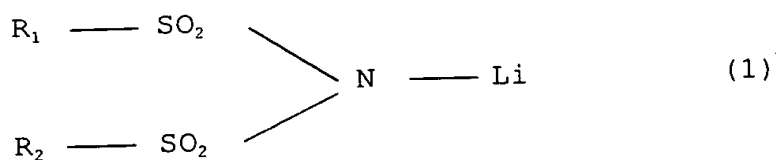


CLAIMS

1. A lithium secondary battery comprising a positive electrode containing as an active material a lithium-containing composite transition metal oxide or a lithium-containing composite transition metal oxide in which a metal element other than the transition metal constituting the lithium-containing composite transition metal oxide is contained in the form of solid solution, said positive electrode further comprises one or more of metals of Groups IIA, IIIB, IVB, VB and VIB and lanthanide elements in the periodic table and compounds of these metals; a negative electrode; and a non-aqueous electrolyte containing a solvent and an electrolyte salt containing at least one salt selected from the group of fluorine-containing inorganic anion lithium salts comprising LiPF_6 , LiBF_4 , LiAsF_6 and LiSbF_6 and at least one salt selected from lithium imide salts represented by the following formula (1):



- (wherein R_1 and R_2 are independent of one another and represent $\text{C}_n\text{X}_{2n+1}$ or $\text{C}_n\text{X}_{2n-1}$ in which n is an integer of 1 to 8 and X is a hydrogen atom or a halogen atom).
2. A lithium secondary battery according to

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claim 1, wherein the concentration of the lithium imide salt in the non-aqueous electrolyte is not less than 0.003 mol/l and not more than 0.50 mol/l.

3. A lithium secondary battery according to
5 claim 1, wherein the concentration of the lithium imide salt in the non-aqueous electrolyte is not less than 0.003 mol/l and not more than 0.25 mol/l.

4. A lithium secondary battery according to any
10 one of claims 1-3, wherein the fluorine-containing inorganic anion lithium salt is LiPF_6 and the lithium imide salt is $\text{LiN}(\text{CF}_3\text{SO}_2)_2$.

5. A lithium secondary battery according to any
15 one of claims 1-4, wherein the negative electrode is mainly composed of a carbon capable of absorbing and releasing lithium and having a spacing (d002) of lattice planes (002) of not more than 3.37 Å and a size (Lc) of crystallites in the direction of axis c of not less than 200 Å.

6. A lithium secondary battery according to any
20 one of claims 1-5, wherein the solvent contains at least a cyclic carbonic acid ester, a cyclic carboxylic acid ester, a non-cyclic carbonic acid ester or an aliphatic carboxylic acid ester.

7. A lithium secondary battery according to any
25 one of claims 1-6, wherein the total concentration of the electrolyte salts in the non-aqueous electrolyte is not less than 0.5 mol/l and not more than 2 mols/l, and the solvent contains at least ethylene carbonate,

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butylene carbonate, vinylene carbonate or γ -butyrolactone.

8. A lithium secondary battery according to any one of claims 1-7, wherein the total concentration of the electrolyte salts in the non-aqueous electrolyte is not less than 0.5 mol/l and not more than 2 mols/l, and the solvent contains at least ethylmethyl carbonate, diethyl carbonate or dimethyl carbonate.

9. A lithium secondary battery according to any one of claims 1-8, wherein the active material of the positive electrode contains at least one member selected from the group consisting of metals of calcium, magnesium, yttrium, lanthanum, titanium, zirconium, vanadium, niobium, chromium, cerium and samarium and compounds thereof.

10. A lithium secondary battery according to any one of claims 1-9, wherein the active material of the positive electrode contains at least one member selected from the group consisting of metals of calcium, magnesium, yttrium, lanthanum, titanium, zirconium, vanadium, niobium, chromium, cerium and samarium and compounds thereof, and the total content thereof in terms of the metals is not less than 10 ppm and not more than 500 ppm based on the active material.

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